IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Backes Application No. 10/781458 Filed: 02/18/2004 Title: Apparatus for Associating Access Points with Stations in a Wireless Network Attorney Docket No.: 160-052	Group Art Unit: 2616 Examiner: Mew

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APPELLANT'S APPEAL BRIEF

This Appellant's Appeal Brief is submitted in accordance with a contemporaneously filed Notice of Appeal.

I. Real Party in Interest

The real party in interest is AutoCell Laboratories, Inc.

II. Related Appeals and Interferences

Appellants are not aware of any appeals or interferences that are related to the present case.

III. Status of the Claims

Claims 1-6 are pending in this application. All of the pending claims were rejected in the final office action dated November 11, 2007. Claims 1 and 6 were previously amended. The rejections of independent claims 1 and 6 are the subject of this appeal. The current state of the claims is shown in Appendix A.

IV. Status of Amendments

An amendment was filed April 10, 2006, in which claims 1 and 6 were amended. That Amendment was entered by the Examiner and considered in the preparation of the Final Office Action dated November 11, 2007.

V. Summary of Claimed Subject Matter

The subject matter of claims 1 and 6 is management of how an access point ("AP") becomes associated with a station ("STA") in a wireless environment, i.e., station migration. The terms "station" and "access point" are well known in the networking art. A station is a mobile wireless terminal device

such as a PDA, cell phone or notebook computer. Access points are fixed location devices which provide network access to stations. In particular, a station obtains network access through a first access point with which it is associated, and may migrate to a second access point by dis-associating with the first access point and associating with the second access point. The invention recited in claims 1 and 6 is logic executed by an access point, including receiving bid messages from stations, tracking parameters related to the stations, and using the parameters to select a bid message, and thereby select a station to permit to become associated with the access point. Steps executed by stations in order to become associated with an access point are not limitations of the claims.

The claimed access point apparatus is described in the Specification at pp. 41-43 in section "2.b AP Auction." The description of collecting bid messages during the "Auction Interval" of steps (340, 342, Figure 21), described in the Specification at the bottom of page 41, supports the limitation "logic for receiving messages from stations indicative of a request to associate with the access point" from claim 1, and the corresponding limitation of claim 6. The treatment and use of biased distance delta described in the last full paragraph of page 41 and the top of page 42 supports the limitation "logic for keeping track of one or more parameters related to the stations from which the messages have been received in the network"[1] from claim 1, and the corresponding limitation of claim 6. The claim limitation "logic for evaluating the one or more parameters to produce an evaluation; and logic for selecting one of the stations from which the message was received to become associated with the access point based upon the evaluation"

[1] See 4.c.2 Biased Distance Calculation at pp. 55-57 for an explanation of biased distance calculation

from claim 1, and corresponding limitations from claim 6, are supported by the second full paragraph on page 42, including "the AP 12 selects the bid entries with the highest biased distance delta values, up to acceptsPerAuction entries."[2]

Support for the limitation in claim 6 "wherein a parameter may be the number of stations associated with the access point, and wherein another parameter may be the distance of a station from the access point" is in the Specification at pages 41, 42, 55 and 56. In one embodiment, the "goal is to have STAs 16 associate to their nearest AP 12 while taking loading (the sum of the individual loads of the STAs 16 already associated to the AP 12) into account."[3] In order to do this, the "bid message contains the value of the difference between the biased distance from the STA 16 to the destination AP 12 and the biased distance to the STA 16's current AP," which is "called the biased distance delta."[4] As described in section *4.c.2 Biased distance calculation*, "[u]sing the my_load_factor to the AP 12, the load_factor currently on the AP 12 (received from Announce messages) and the corrected distance to the AP 12, the STA 16 calculates a biased_distance value to account for loading on the prospective AP 12 in comparison to the loading on the STA 16's current AP, as shown in Figure 29."[5] A specific algorithm for the calculation is provided at the bottom of page 55. As described at page 42, second full paragraph, "[t]he AP 12 selects the bid entries with the highest biased distance delta values," i.e., as a function of a distance parameter and a load parameter.

[2] See also the description of distance calculation at pp. 38-39
[3] Specification, page 41, first full paragraph
[4] Id. at page 41, second full paragraph
[5] Id. at page 55, second full paragraph

References to support are shown embedded within the claims for convenience as follows:

1. (previously presented) Apparatus in an access point **(12, Fig. 2)** in a wireless communications environment including multiple access points and stations **(16, Fig. 2)**, wherein stations gain network access by associating with one or more of the access points, comprising:

logic for receiving messages from stations indicative of a request to associate with the access point; **("A STA 16 will send a Bid message to an AP that is "better" than the STA's current AP," page 41, lines 16-17; "The AP 12 collects any received Bids over a period of Auction Interval (steps 340,342)," page 41, lines 21-22.)**

logic for keeping track of one or more parameters related to the stations from which the messages have been received in the network; **("The Bid message contains the value of the difference between the biased distance from the STA 16 to the destination AP 12 and the biased distance to the STA 16's current AP. This value is called the biased distance delta," page 41, lines 18-20, "If a Bid is received from a STA 16 from which a Bid has already been received (step 344), the new bid information replaces the previous bid information (step 346). Otherwise a new entry is created for the STA 16 (step 348)," page 41, line 22 through page 42, line 3)**

logic for evaluating the one or more parameters to produce an evaluation; **("At the end of Auction Interval (step 352), the AP 12 processes the received**

bid information. (The Auction Interval in an exemplary 802.11 environment may be on the order of, for example, 7.5 seconds.) The age of all bid entries is incremented by one (step 354) and then any bid entry whose age is greater than Max Bid Age is deleted (step 356). The list is then sorted by biased_distance_delta value (step 358)." page 42, lines 4-8) and

logic for selecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation, and rejecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation. **("The AP 12 selects the bid entries with the highest biased distance delta values, up to acceptsPerAuction entries, and sends a DRCP Accept message to each of the STAs 16 corresponding to those entries (step 360). The IDs of each STA 16 being sent an Accept is put in a list of outstanding accepts (step 362), and a count of accepted STAs who have not yet associated and registered is noted as numAcceptsOut (step 364). At this point the next auction period begins." page 42, lines 9-14; "If no DRCP Accept is received (step 414) in response to the STA's Bid message after a certain period of time (step 530), the STA remains associated with its current AP." page 57, lines 8-9)**

6. (previously presented) Apparatus in an access point in a wireless communications environment including multiple access points and stations,

wherein stations gain network access by associating with one or more of the access points, comprising:

logic for receiving messages from stations indicative of a request to associate with the access point; **("A STA 16 will send a Bid message to an AP that is "better" than the STA's current AP," page 41, lines 16-17; "The AP 12 collects any received Bids over a period of Auction Interval (steps 340,342)," page 41, lines 21-22)**

logic for keeping track of one or more parameters related to stations from which the messages have been received in the network, wherein the messages include at least some of the one or more parameters; **("The Bid message contains the value of the difference between the biased distance from the STA 16 to the destination AP 12 and the biased distance to the STA 16's current AP. This value is called the biased distance delta," page 41, lines 18-20, "If a Bid is received from a STA 16 from which a Bid has already been received (step 344), the new bid information replaces the previous bid information (step 346). Otherwise a new entry is created for the STA 16 (step 348)," page 41, line 22 through page 42, line 3)**

wherein a parameter may be the number of stations associated with the access point, and wherein another parameter may be the distance of a station from the access point; **("The purpose of the Auction is to accomplish the distribution of STAs 16 across APs 12 in a manner that optimizes wireless communications performance. The goal is to have STAs 16 associate to their nearest AP 12 while taking loading (the sum of the individual loads of the**

STAs 16 already associated to the AP 12) into account. This allows the RF footprints of the APs 12 and STAs 16 to be minimized, while ensuring that no AP 12 is overloaded. STAs 16 learn of available APs 12 through the Announce messages transmitted by the APs 12. As will be further described with regard to STA optimization, a STA 16 calculates a "biased distance" to each AP 12 it hears from, including its own AP, using the received power and loading information from the Announce messages. A STA 16 will send a Bid message to an AP that is "better" than the STA's current AP, where better means that the AP has a lower biased distance. The Bid message contains the value of the difference between the biased distance from the STA 16 to the destination AP 12 and the biased distance to the STA 16's current AP. This value is called the biased distance delta." page 41, lines 7-20)

logic for evaluating the one or more parameters to produce an evaluation; **("At the end of Auction Interval (step 352), the AP 12 processes the received bid information. (The Auction Interval in an exemplary 802.11 environment may be on the order of, for example, 7.5 seconds.) The age of all bid entries is incremented by one (step 354) and then any bid entry whose age is greater than Max Bid Age is deleted (step 356). The list is then sorted by biased_distance_delta value (step 358)." page 42, lines 4-8)** and

logic for selecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation, and rejecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the

evaluation. **("The AP 12 selects the bid entries with the highest biased distance delta values, up to acceptsPerAuction entries, and sends a DRCP Accept message to each of the STAs 16 corresponding to those entries (step 360). The IDs of each STA 16 being sent an Accept is put in a list of outstanding accepts (step 362), and a count of accepted STAs who have not yet associated and registered is noted as numAcceptsOut (step 364). At this point the next auction period begins." page 42, lines 9-14; "If no DRCP Accept is received (step 414) in response to the STA's Bid message after a certain period of time (step 530), the STA remains associated with its current AP." page 57, lines 8-9)**

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 1 and 6 were rejected under 35 U.S.C. 103(a) over U.S. Patent Application Publication No. US 2004/0054767 A1 ("Karaoguz"), in view of U.S. Patent Application Publication No. US 2003/0134642 (Kostic).

VII. Argument

Claims 1 and 6 distinguish the combination of Karaoguz and Kostic because the selection is by an access point, in response to a request from a station, for controlling migration of stations, i.e., association.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Claims 1 and 6 distinguish the combination of Karaoguz and Kostic because the rate of station migration is controlled by the access point selecting the station in response to (a) a request from the station and (b) based on the tracked and evaluated parameters. The Examiner concedes that Karaoguz fails to teach receiving messages from the stations indicative of a request to associate with the access point and thereafter selecting one of the stations by the access point,[6] but asserts that Kostic teaches the limitation at [0016-0020]. However, nothing in the cited paragraphs of Kostic suggests controlling station migration rate in the recited manner. Rather, as described in [0016 and 0017] the access points terminate associations and as described in [0018] the station "remembers" which access points terminated associations and avoids re-association with those access points. Note that, unlike the recited invention, Kostic places the station in control of preventing stations from "bouncing" between access points, rather than the access points themselves. Note also that because mobile stations may physically change position, avoiding an association with an access point from which association was previously terminated may actually be detrimental to network performance. Indeed, Kostic describes a somewhat arbitrary technique for controlling migration because decisions are made based on conditions which may

[6] Final OA, page 3

no longer exist. The simple but powerful alternative recited in the claims does not discriminate based on previous association, but rather evaluates all of the candidate stations based on the tracked parameters. Further, the rate of migration is controlled more directly and logically by selecting and rejecting stations on the basis of evaluation cycles. Strictly for explanation, and without limitation, this could result in an access point accepting the X best candidates per Y seconds. Clearly, this is both distinct from and better than access points terminating stations and those stations avoiding access points that previously terminated association.

The Examiner appears to suggest that an access point terminating an association is equivalent to an access point rejecting a bid to become associated. However, that suggestion lacks merit for several reasons. claims 1 and 6 describe what the access point does in order to control the rate of station migration by accepting and rejecting bids to become associated. In particular, claim 1 recites "logic for selecting one of the stations from which the message was received to become associated with the access point based upon the evaluation." Similarly, claim 6 recites "logic for receiving messages from stations indicative of a request to associate with the access point; … logic for selecting one of the stations from which the message was received to become associated with the access point based upon the evaluation." In contrast, Kostic has the access points terminating associations and stations remembering to not go back to those access points. Note that the claimed invention controls the rate of station migration from any given starting time without creating disruption, whereas Kostic creates disruptive

migration by first terminating associations in order to control migration. Terminating an association is a fundamentally different act than rejecting a bid to associate, and is distinct for at least the reason that it forces station migration rather than inhibiting it.

If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Accordingly, claims 2-5 are allowable for the same reasons as claims 1 and 6.

VIII. Conclusion

Appellants submit that the rejections of the present claims under 35 U.S.C. 103 are improper for at least the reasons set forth above. Appellants accordingly request that the rejections be withdrawn and the case put forward for allowance.

Respectfully submitted,

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Appendix A - Claims

1. (previously presented) Apparatus in an access point in a wireless communications environment including multiple access points and stations, wherein stations gain network access by associating with one or more of the access points, comprising:

logic for receiving messages from stations indicative of a request to associate with the access point;

logic for keeping track of one or more parameters related to the stations from which the messages have been received in the network;

logic for evaluating the one or more parameters to produce an evaluation; and

logic for selecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation, and rejecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation.

2. (original) The apparatus of claim 1 wherein the logic for keeping track includes logic for receiving messages from stations, and wherein the messages include at least some of the one or more parameters.

3. (original) The apparatus of claim 2 wherein a parameter is the number of stations associated with the access point.

4. (previously presented) The apparatus of claim 2 wherein a parameter is the distance of a station from the access point.

5. (original) The apparatus of claim 4 wherein at least some of the one or more parameters are stored in a table.

6. (previously presented) Apparatus in an access point in a wireless communications environment including multiple access points and stations, wherein stations gain network access by associating with one or more of the access points, comprising:

logic for receiving messages from stations indicative of a request to associate with the access point;

logic for keeping track of one or more parameters related to stations from which the messages have been received in the network, wherein the messages include at least some of the one or more parameters;

wherein a parameter may be the number of stations associated with the access point, and wherein another parameter may be the distance of a station from the access point;

logic for evaluating the one or more parameters to produce an evaluation; and

logic for selecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation, and rejecting, for a cycle, at least one of the stations from which the message was received to become associated with the access point based upon the evaluation.

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.